REMARKS

This application has been carefully reviewed in light of the Office Action dated December 6, 2004. Claims 19 to 29 are now pending in the application, with Claims 1 to 18 having been cancelled, and Claims 19 to 29 having been newly-added. Claims 19, 23, 27, 28 and 29 are the independent claims herein. Reconsideration and further examination are respectfully requested.

In the Office Action, Claims 1 to 6, 9 to 11 and 14 to 16 were rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent No. 6,538,762 (Terashima), and Claims 7, 8, 12, 13, 17 and 18 were rejected under 35 U.S.C. § 103(a) over Terashima in view of U.S. Patent No. 5,854,882 (Wang). Inasmuch as Claims 1 to 18 have been canceled, the rejections are believed to be obviated. Nonetheless, Applicants request that the Examiner reconsider and withdraw the rejections, and Applicants submit that newly-added Claims 19 to 29 are believed to be allowable over the art of record for at least the following reasons.

The present invention relates to controlling dot connectivity in a binary image. According to one aspect of the invention, characteristic-information concerning dot reproducibility is acquired by an image processing apparatus (e.g., a PC) from an external image output device (e.g., a printer). Based on the acquired characteristic-information, a dot connectivity parameter, which is variably controllable to control dot connectivity in a binary image, to be used for binarization of a multilevel input image is determined. In one aspect, the dot connectivity parameter may be determined from a test pattern printed by, read by, calculated by, and stored in the printer. Then, the multilevel image is binarized using the dot connectivity parameter. As a result, the present invention improves the reproduction of isolated dots, thereby addressing a problem of poor image quality due to variations in isolated dot reproduction between print engines as well as changes in the environment and changes over time.

Referring specifically to the claims, newly-added independent claim 19 is an image processing apparatus capable of transmitting binary image data to an external image

output device via a network, the apparatus comprising input means for inputting, pixel by pixel, a multilevel image containing gray-scale information, binarization means for binarizing the multilevel image by using a dot connectivity parameter which is variably controllable to control dot connectivity in a binary image, communication means for communicating with the external image output device via the network, characteristic-information acquisition means for acquiring characteristic-information concerning dot reproducibility from the external image output device by the communication means, determination means for determining the dot connectivity parameter used by the binarization means in accordance with the characteristic-information acquired by the characteristic-information acquisition means, and transmitting means for transmitting image data binarized by the binarization means to the external image output device, wherein the binarization means binarizes the multilevel image using the dot connectivity parameter determined by the determination means, and the transmitting means transmits the image data binarized by the binarization means to the external image output device from which the characteristic-information is acquired.

Newly-added independent Claim 23 is the method claim that substantially corresponds to Claim 19.

Newly-added independent Claim 27 includes features along the lines of Claim 19, but is more specifically directed to an image processing apparatus capable of transmitting binary image data to an external image output device via a network, the apparatus comprising input means for inputting, pixel by pixel, a multilevel image containing gray-scale information, binarization means for binarizing the multilevel image by using a dot connectivity parameter which variably controllable to control dot connectivity in a binary image, means for transmitting, to the external image output device, test pattern data for acquiring information concerning dot reproducibility of the external image output device, reading means for reading a test pattern output by the external image output device based on the test pattern data, calculation means for calculating a dot connectivity parameter capable of producing dots with a desired dot connectivity for the

external image output device, based on the test pattern read by the reading means, and transmitting means for transmitting image data binarized by the binarization means to the external image output device, wherein the binarization means binarizes the multilevel image by using the dot connectivity parameter calculated by the calculation means, and the transmitting means transmits the image data binarized by the binarization means to the external image output device in which the test pattern has been output.

Amended independent Claims 28 and 29 are method and system claims, respectively, that substantially correspond to Claim 27.

The art of record, alone or in any permissible combination, is not seen to disclose or suggest the features of the present invention. More particularly, with regard to Claims 19 and 23, the art of record is not seen to disclose or to suggest at least the feature of determining, based on characteristic-information of dot reproducibility acquired from an image output device, a dot connectivity parameter which is variably controllable to control dot connectivity in a binary image, where the dot connectivity parameter is used to binarize multilevel image data that is transmitted to the image output device.

Similarly, with regard to Claims 27 to 29, the art of record is not seen to disclose or to suggest at least the feature of calculating a dot connectivity parameter capable of producing dots with a desired dot connectivity for an external image output device based on a test pattern transmitted to, output by, and read by the external image output device, and binarizing a multilevel image by using the dot connectivity parameter, which variably controllable to control dot connectivity in a binary image, that is acquired from the external image output device.

Terashima is merely seen to disclose that an image is rasterized from a high-order raster image into a low-order raster image. A back-end parameter is imparted to a printer controller in order to correctly print the low-order raster image. However, the back-end parameter of Terashima is not seen to correspond to the determined dot connectivity parameter of the present invention. In this regard, the backend parameter is merely selected in the host computer based on the selected printer, and the parameter is provided

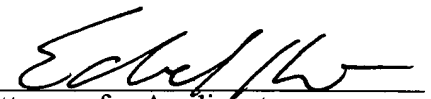
to the printer. In contrast, the present invention acquires characteristic-information regarding dot reproducibility from the image output device and then determines the dot connectivity parameter that is to be used for binarization. Thus, Tereshima is not seen to disclose or to suggest the features of the present invention.

Wang is merely seen to disclose a system for producing corrected halftone images. According to the patent, a test pattern is printed out and read so as to determine image correction parameters that are then used to correct halftone images. However, Wang's correction parameter is not seen to correspond to a dot connectivity parameter which is variably controllable to control dot connectivity in a binary image, nor is the correction parameter seen to be acquired from an external image output device by an image processing apparatus such that the acquired parameter is used in binarizing a binary image. Accordingly, even if Tereshima and Wang could have been combined at the time of the invention, such a combination still would not have resulted in the present invention.

In view of the forgoing amendments and remarks, newly-added independent Claims 19, 23 and 27 to 29, as well as the claims depending therefrom, are believed to be allowable.

Applicants' undersigned attorney may be reached in our Costa Mesa, California office by telephone at (714) 540-8700. All correspondence should continue to be directed to our address given below.

Respectfully submitted,



Attorney for Applicants
Edward A. Kmett
Registration No. 42,746

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200

CA_MAIN 92913v1